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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,692	10/24/2001	Annelie Stoehr	32860-000191	8524

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HARNESS, DICKEY & PIERCE, P.L.C.
P.O.BOX 8910
RESTON, VA 20195

EXAMINER	
PROCTOR, JASON SCOTT	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/980,692	STOEHR, ANNELIE	
	Examiner	Art Unit	
	Jason Proctor	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 10/24/2001

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 October 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/24/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-16 have been submitted for examination. Claims 17-46 have been added by preliminary amendment dated October 24, 2001. Claims 1-46 are pending in the application.

Claims 1-46 have been rejected.

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on April 27, 1999. It is noted, however, that applicant has not filed a certified copy of the 199 19 106.9 application as required by 35 U.S.C. 119(b).

Specification

2. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f). The improperly incorporated references are number [1] through [5] at page 8, paragraph 0043 of the specification.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the methods of claims 2-15 and 17-46 must be shown or the feature(s) canceled from the claim(s). These claims recite method steps which are not represented in the flowchart of Fig. 1. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections – 35 USC § 101

35 U.S.C. § 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-46 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter for at least the following reasons.

MPEP 2106 reads as follows:

> The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (*Brenner v. Manson*, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); *In re Ziegler*, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). Accordingly, a complete disclosure should contain some indication of the practical application for the claimed invention, i.e., why the applicant believes the claimed invention is useful.

The claimed inventions fail to produce a tangible result. Where independent claims 1 and 16 recite "use the determined efficient working point to design the technical system," the disclosure fails to define this act except as an abstract idea and the connection between a solution of the Stratonovich equation and designing a technical system is so tenuous that the "technical system" cannot be regarded as the result of the method.

MPEP 2106 reads as follows:

> Courts have expressed a concern over "preemption" of ideas, laws of nature or natural phenomena. The concern over preemption was expressed as early as 1852. See *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."); *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 132, 76 USPQ 280, 282 (1948) (combination of six species of bacteria held to be nonstatutory subject matter). The concern over preemption serves to bolster and justify the prohibition against the patenting of such subject matter. In fact, such concerns are only relevant to claiming a scientific truth or principle. Thus, a claim to an "abstract idea" is nonstatutory because it does not represent a practical application of the idea, not because it would preempt the idea.

The claimed inventions are recitations of abstract ideas. The disclosure of the application fails to provide any meaningful details of implementation. The disclosure reads as though it were an outline describing an invention that could be built and used, but leaves all details of implementation to the reader. The disclosure and claims are directed to an abstract idea for an invention rather than describe a functional implementation of a method. When taken as a whole, this does not describe a statutory invention under 35 U.S.C. § 101.

MPEP 2106 reads as follows:

> A claim that requires one or more acts to be performed defines a process. However, not all processes are statutory under 35 U.S.C. 101. *Schrader*, 22 F.3d at 296, 30 USPQ2d at 1460. To be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan (discussed in I) below), or (B) be limited to a practical application within the technological arts (discussed in ii) below). See *Diamond v. Diehr*, 450 U.S. at 183-84, 209 USPQ at 6 (quoting *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1877)) [...] If a physical transformation occurs outside the computer, a disclosure that permits a skilled artisan to practice the claimed invention, i.e., to put it to a practical use, is sufficient. On the other hand, it is necessary for the claimed invention taken as a whole to produce a practical application if there is only a transformation of signals or data inside a computer or if a process merely manipulates concepts or converts one set of numbers into another.

The claimed inventions do not result in a transformation outside of the computer. Indeed, claim 1 and its dependents are not tangibly embodied. The claimed inventions are not limited to a practical application within the technological arts. To be so limited, the inventions would necessarily rely on the limitation "using the determined efficient working point to design the technical system" which has been shown above to be insufficiently disclosed and has no logical connection to the solution to a Stratonovich equation. The disclosure is devoid of even a suggested practical application for the claimed invention except the ambiguous and abstract "technical system".

MPEP 2106 reads as follows:

> A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is nonstatutory despite the fact that it might inherently have some usefulness. In *Sarkar*, 588 F.2d at 1335, 200 USPQ at 139, the court explained why this approach must be followed:
>
> No mathematical equation can be used, as a practical matter, without establishing and substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be per se subject to patenting as a "process" under 101. Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present in the formula into an embodiment of those ideas, or into an application of the formula, is foreclosed by the current state of the law.

The claimed inventions merely perform a purely mathematical algorithm and are therefore nonstatutory. Applicant is respectfully requested to review *In re Sarkar*, cited above in MPEP 2106, as providing an example of how to avoid a rejection under 35 U.S.C. § 101 where use of a particular equation is the inventive step of a mathematical algorithm.

Claim Rejections – 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-46 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The disclosure of the application teaches a collection of abstract ideas and concepts that could be combined to achieve the invention. The disclosure provides no exemplary embodiments, asserts practical utility only abstractly, and offers no details of implementation. As an example, the first limitation of claim 1 recites "providing a target function of the technical system" which is not described by the disclosure. There is no exemplary target function of any technical system shown. Neither its form nor its derivation are described. Claim 1 further recites "determining a Stratonovich equation using a projection operator" which is not described by the disclosure. For example, there is no teaching of how to determine a Stratonovich equation or what the projection operator might be. Claim 1 concludes with "using the determined efficient working point to design the technical system" which is not described by the disclosure. There is no logical connection between a solution of a Stratonovich equation and the design of a technical system. The disclosure fails to teach how one might use such a solution to design a technical system.

The limitations discussed above are exemplary of the claims as a whole. The disclosure appears to be an adaptation of an academic journal publication and fails to comply with the requirements of 35 U.S.C. § 112, first paragraph, in instances too numerous to cite. The disclosure appears to rely upon the several references incorporated by reference (paragraph 0043) to provide the description required by 35 U.S.C. § 112, first paragraph, which is, of course, impermissible according to MPEP 608.01(p)(I).

6. Claims 16, 18, 33-40, 43, and 44 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 16 recites an arrangement that appears to perform the method of claim 1, however such a system or apparatus is not described by the specification. While Fig. 4 depicts a computer system, the corresponding explanation of Fig. 4 (paragraph 0041) contains no reference whatsoever to the computer system of Fig. 4 performing the inventive method, nor that the inventive method is somehow embodied on the computer system. Fig. 4 therefore depicts a computer system that is tangential to the disclosed invention. The disclosure contains no reference to the arrangement of claim 16 or its dependent claims.

7. Claims 1-46 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As indicated above, the disclosure of the application teaches a collection of abstract ideas and concepts that could be combined to achieve the invention. The disclosure appears to rely upon the several references incorporated by reference (paragraph 0043) to provide the enablement required by 35 U.S.C. § 112, first paragraph, which is, of course, impermissible according to MPEP 608.01(p)(I). The disclosure is incomplete with regard to the enablement requirement of 35 U.S.C. § 112, first paragraph, and therefore a person of ordinary skill in the art would be unable to make and use the claimed invention as described.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-46 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the process by which a solution to a Stratonovich equation is used to design a technical system, as represented by at least independent claims 1 and 16.

9. Claims 1-46 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Referring to the "omitted steps" rejection above, these omitted steps are necessary to achieve the goal of the method as recited in the preamble, "designing a technical system". As a result, it is particularly indefinite how the recited steps are in any way related to "designing a technical system". As taught by the disclosure, the recited steps are related to a mathematical algorithm, which produces a desired mathematical result. The disclosure goes no further except to ambiguously state that "the efficient working point can be used to design the technical system".

Claim Interpretation

Because of the significant rejections under 35 U.S.C. §§ 101 and 112, first and second paragraph, the claims are so indefinite, incomplete and nonstatutory that no art rejection would be warranted as substantial guesswork would be involved in determining the scope, content, and statutory basis of these claims. See *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962); *Ex parte Brummer*, 12 USPQ 2d, page 1654; and also *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). However, in the interest of compact prosecution, an art rejection will be asserted in view of the broadest and most reasonable interpretation of the claims. *Ex parte Ionescu*, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984).

Applicants' invention is interpreted as a stochastic model of a dynamic physical system and a method for deriving that model.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-46 are rejected under 35 U.S.C. § 103(a) as being unpatentable over "Mechanical Engineers' Handbook, Second Edition", by Myer Kutz, ed. (Kutz).

Kutz teaches motivation for simulating a nonlinear or time varying system [page 840, section 27.7.1], including simulation carried out with the assistance of computing equipment.

Kutz teaches methods for modeling stochastic systems, which contain random components such as wind gusts, electrical noise, or from a lack of precise knowledge of the system model [page 846, section 27.8.1]. Kutz teaches a method of modeling random variables [page 846-847, section 27.8.1, "Random Variables"]. Kutz further teaches a method for modeling a random process, which is a set of random variables with time-dependent elements [page 849, second 27.8.1, "Random Processes"].

Kutz teaches methods of modeling nonlinear systems [page 852, section 27.8.4] including methods for linearizing approximations [page 853, section 27.8.4, "Linearizing Approximations"].

Kutz teaches several methods for numerical integration, including a predictor-corrector method [page 844, section 27.7.2, "Predictor-Corrector Methods"] and dealing with time constants or time steps [page 845, section 27.7.2, "Time Constants and Time Steps"].

Kutz teaches a process for implementing a simulation [page 847, Fig. 27.26] which teaches "establish values of model parameters", equivalent to determining a valid working domain for the simulation. Without prior knowledge of the valid working domain, represented by the model parameters, no meaningful analysis could be drawn from the results of the simulation. The process continues by calculating the new states based on the model's equations and producing output.

It would have been obvious to a person of ordinary skill in the art at the time of Applicants' invention to combine teachings from various portions of a handbook for that particular art to arrive at the claimed invention. In particular, Kutz' "Mechanical Engineers' Handbook" teaches various techniques related to modeling a dynamic physical system. A person

of ordinary skill in the art would combine the teachings of such a handbook to meet the needs of the problem at hand. The claimed inventions is such a combination, where a stochastic model is constructed using a Stratonovich equation to define a random variable, and several methods of analyzing the model are recited by dependent claims. Kutz provides motivation for performing this type of situation when the dynamic system includes a random components, such as gusts of wind.

Conclusion

Art considered pertinent by the examiner but not applied has been cited on form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached at (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3713.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private

PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason Proctor
Examiner
Art Unit 2123

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LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Requirement for Information – 37 CFR 1.105

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the Examiner has determined is reasonably necessary to the examination of this application:

1. Identification of pending or abandoned applications filed by at least one of the inventors or assigned to the same assignee as the current application that disclose similar subject matter that are not otherwise identified in the current application. Numerous copending applications assigned to Siemens AG and disclosing similar subject matter have been discovered. This requirement pertains to all applications those assigned to Siemens AG that may be regarded as relevant to the instant application.

The fee and certification requirements of 37 CFR 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 CFR 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 CFR 1.105 are subject to the fee and certification requirements of 37 CFR 1.97.

The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained will be accepted as a complete reply to the requirement for that item.

This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached at (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3713.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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Jason Proctor
Examiner
Art Unit 2123

jsp

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100